

NOTES BY THE EDITOR.

DATES OF FIRST SNOWFALL.

The following table has been constructed in continuation of the similar table in the WEATHER REVIEW for September, 1886, p. 254; it shows the dates on which snow first fell to an amount sufficient to be recorded as a trace at the regular stations of the Signal Service or Weather Bureau. Cases in which snow is reported as falling "in the mountains near by" are not included. The mountain stations of Pikes Peak and Mount Washington are omitted, since, although snow appears nearly every month of the year at these places, yet this is to be considered as indicating the condition of the air in the cloud regions into which their summits penetrate, rather than the climatic conditions proper to the lower arable earth, where snowfall is so important to agriculture.

A chart showing the total snowfall from July 1, 1893, to June 30, 1894, is being prepared for publication in the REVIEW, when the important relations between snowfall and topography, geology, forestry, agriculture, water supply, and other matters will be mentioned.

Dates of first snowfall at Weather Bureau stations.

Station.	1886-'87.	1887-'88.	1888-'89.	1889-'90.	1890-'91.	1891-'92.	1892-'93.	1893-'94.
<i>New England.</i>								
Eastport, Me.	Nov. 13	Nov. 5	Oct. 24	Oct. 28	Nov. 4	Oct. 23	Nov. 6	Nov. 16
Portland, Me.	Nov. 13	Nov. 11	Nov. 14	Nov. 10	Nov. 11	Nov. 20	Nov. 2	Nov. 15
Boston, Mass.	Nov. 7	Nov. 11	Nov. 17	Nov. 27	Nov. 11	Oct. 23	Nov. 5	Nov. 15
New Haven, Conn.	Nov. 7	Nov. 11	Nov. 25	Oct. 23	Nov. 12	Oct. 13	Nov. 5	Nov. 15
New London, Conn.	Nov. 7	Nov. 11	Oct. 9	Oct. 25	Nov. 23	Oct. 23	Nov. 27	Nov. 15
<i>Middle Atlantic States.</i>								
Albany, N. Y.	Nov. 6	Nov. 11	Oct. 9	Nov. 27	Nov. 3	Oct. 23	Nov. 5	Oct. 29
New York, N. Y.	Nov. 7	Nov. 11	Nov. 25	Nov. 30	Nov. 4	Nov. 28	Nov. 9	Dec. 3
Philadelphia, Pa.	Nov. 6	Nov. 11	Nov. 24	Oct. 23	Nov. 20	Nov. 28	Nov. 5	Nov. 20
Atlantic City, N. J.	Dec. 4	Dec. 1	Nov. 23	Dec. 4	Nov. 20	Nov. 28	Nov. 23	Dec. 4
Baltimore, Md.	Nov. 13	Dec. 17	Nov. 24	Oct. 23	Oct. 19	Nov. 5	Nov. 9	Nov. 15
Washington, D. C.	Nov. 25	Nov. 11	Nov. 26	Oct. 23	Nov. 28	Nov. 5	Nov. 15	Nov. 15
Cape Henry, Va.	Dec. 4	c	c	c	Nov. 28	Nov. 23	Nov. 24	Nov. 15
Lynchburg, Va.	Dec. 4	Dec. 2	Nov. 26	Nov. 17	Dec. 8	Nov. 28	Nov. 26	Nov. 15
Norfolk, Va.	Dec. 4	Jan. 18	Feb. 11	Jan. 23	Dec. 8	Nov. 28	Nov. 23	Nov. 24
<i>South Atlantic States.</i>								
Hatteras, N. C.	c	c	c	Mar. 16	c	Nov. 28	Jan. 4	Feb. 5
Kittyhawk, N. C.	Dec. 4	c	c	c	c	Nov. 28	Dec. 26	Jan. 24
Wilmington, N. C.	Dec. 4	c	Feb. 11	Mar. 2	c	Nov. 28	Dec. 26	Jan. 24
Charleston, S. C.	Dec. 6	c	Feb. 20	Mar. 2	c	Nov. 28	Dec. 27	Feb. 25
Augusta, Ga.	Dec. 5	c	Jan. 28	Mar. 2	c	Nov. 29	Dec. 27	c
Savannah, Ga.	Dec. 6	c	Jan. 28	Mar. 2	c	c	Dec. 27	c
Jacksonville, Fla.	c	c	c	c	c	c	Dec. 27	c
Pensacola, Fla.	Dec. 5	c	Jan. 28	c	c	Jan. 14	Dec. 26	Feb. 25
<i>Florida Peninsula.</i>								
Key West, Fla.	c	c	c	c	c	c	c	c
<i>East Gulf States.</i>								
Atlanta, Ga.	Dec. 3	Feb. 27	Jan. 28	Mar. 7	Dec. 16	Jan. 6	Dec. 26	Dec. 17
Mobile, Ala.	Dec. 5	c	Jan. 28	c	Feb. 26	Jan. 5	Dec. 26	Feb. 25
Montgomery, Ala.	Dec. 5	Dec. 26	Jan. 28	c	Feb. 26	Jan. 5	Dec. 26	Jan. 25
Vicksburg, Miss.	Dec. 5	Dec. 24	Jan. 28	c	Feb. 26	Jan. 6	Dec. 26	Jan. 24
New Orleans, La.	Dec. 5	c	c	c	Jan. 14	Jan. 19	Feb. 25	c
<i>Western Gulf States.</i>								
Shreveport, La.	Nov. 17	Dec. 22	c	c	Feb. 9	Jan. 12	Dec. 26	Feb. 30
Little Rock, Ark.	Dec. 4	Dec. 16	Jan. 28	c	Feb. 9	Nov. 20	Nov. 9	Dec. 24
Galveston, Tex.	c	Jan. 15	c	c	Jan. 19	c	c	c
Palestine, Tex.	Nov. 17	Dec. 22	Jan. 27	c	Mar. 8	Jan. 12	Dec. 26	Feb. 11
San Antonio, Tex.	c	Dec. 23	c	c	Jan. 18	c	c	c
<i>Rio Grande Valley.</i>								
Brownsville, Tex.	c	Jan. 15	c	c	c	c	c	c
Rio Grande City, Tex.	c	Dec. 23	c	c	c	c	c	c
<i>Ohio Valley & Tennessee.</i>								
Knoxville, Tenn.	Dec. 4	Dec. 17	Dec. 12	Nov. 19	Dec. 16	Jan. 2	Nov. 9	Dec. 17
Memphis, Tenn.	Nov. 17	Dec. 26	Jan. 18	Nov. 17	Jan. 12	Nov. 22	Nov. 9	Dec. 30
Nashville, Tenn.	Nov. 17	Nov. 27	Dec. 3	Nov. 18	Dec. 17	Nov. 20	Nov. 9	Dec. 3
Louisville, Ky.	Nov. 6	Nov. 27	Nov. 16	Nov. 18	Dec. 8	Nov. 3	Nov. 9	Dec. 2
Indianapolis, Ind.	Oct. 27	Oct. 29	Nov. 16	Nov. 17	Oct. 29	Nov. 14	Nov. 9	Nov. 15
Cincinnati, Ohio.	Nov. 6	Nov. 19	Nov. 16	Nov. 28	Oct. 30	Nov. 3	Nov. 9	Nov. 15
Pittsburg, Pa.	Nov. 6	Nov. 10	Oct. 20	Oct. 7	Oct. 30	Oct. 22	Oct. 25	Oct. 29
<i>Lower Lakes.</i>								
Buffalo, N. Y.	Oct. 1	Oct. 29	Sept. 16	Oct. 6	Oct. 30	Aug. 28	Oct. 5	Oct. 29
Oswego, N. Y.	Oct. 17	Nov. 11	Oct. 3	Oct. 7	Nov. 3	Nov. 14	Nov. 4	Oct. 15
Rochester, N. Y.	Oct. 17	Nov. 29	Oct. 3	Oct. 7	Nov. 1	Oct. 22	Oct. 5	Oct. 15
Erie, Pa.	Nov. 6	Oct. 21	Oct. 3	Nov. 5	Oct. 30	Nov. 14	Nov. 4	Oct. 25
Cleveland, Ohio.	Nov. 6	Oct. 21	Nov. 16	Nov. 15	Oct. 30	Oct. 27	Oct. 5	Oct. 29
Toledo, Ohio.	Nov. 6	Oct. 21	Oct. 20	Nov. 28	Nov. 2	Nov. 14	Nov. 4	Oct. 28
Detroit, Mich.	Nov. 9	Oct. 21	Oct. 19	Nov. 15	Oct. 28	Oct. 7	Nov. 4	Oct. 28
<i>Upper Lakes.</i>								
Alpena, Mich.	Oct. 1	Oct. 11	Oct. 2	Oct. 6	Oct. 26	Oct. 22	Oct. 25	Oct. 14
Escanaba, Mich.	Sept. 30	Oct. 21	c	c	Nov. 29	c	c	c
Grand Haven, Mich.	Nov. 7	Oct. 21	Nov. 15	Nov. 5	Oct. 29	Nov. 1	Nov. 4	Oct. 28
Marquette, Mich.	Sept. 30	Oct. 11	Oct. 2	Sept. 20	Sept. 13	Oct. 19	Oct. 23	Sept. 25
Port Huron, Mich.	Nov. 6	Oct. 14	Oct. 2	Oct. 6	Oct. 28	Nov. 14	Oct. 5	Oct. 28
Chicago, Ill.	Nov. 17	Oct. 21	Oct. 18	Oct. 30	Nov. 1	Nov. 14	Nov. 7	Nov. 15
Milwaukee, Wis.	Nov. 6	Oct. 21	Nov. 19	Oct. 29	Nov. 8	Oct. 26	Nov. 12	c
Duluth, Minn.	Sept. 30	Oct. 20	Oct. 19	Sept. 26	Oct. 28	Oct. 31	Oct. 31	Oct. 24
<i>Upper Mississippi Valley.</i>								
St. Paul, Minn.	Nov. 16	Oct. 22	Oct. 19	Sept. 26	Oct. 29	Nov. 8	Nov. 1	Nov. 2
La Crosse, Wis.	Nov. 16	Oct. 22	Oct. 19	Sept. 26	Nov. 3	Nov. 3	Nov. 7	Nov. 28
Davenport, Iowa.	Nov. 17	Nov. 19	Oct. 21	Nov. 26	Dec. 2	Nov. 8	Nov. 7	Nov. 12
Des Moines, Iowa.	Nov. 16	Nov. 19	Oct. 21	Nov. 12	Nov. 8	Nov. 8	Nov. 7	Nov. 11

Dates of first snowfall—Continued.

Station.	1886-'87.	1887-'88.	1888-'89.	1889-'90.	1890-'91.	1891-'92.	1892-'93.	1893-'94.
<i>Up. Miss. Val.—Cont'd.</i>								
Dubuque, Iowa.	Nov. 16	Oct. 22	Nov. 10	Nov. 14	Nov. 3	Nov. 8	Oct. 26	Nov. 12
Keokuk, Iowa.	Nov. 17	Oct. 29	Oct. 21	Nov. 18	Dec. 3	Oct. 6	Nov. 7	Nov. 21
Cairo, Ill.	Nov. 8	Oct. 27	Dec. 12	Nov. 17	Dec. 8	Nov. 20	Nov. 9	Dec. 3
Springfield, Ill.	Nov. 17	Nov. 19	Nov. 16	Nov. 17	Dec. 3	Nov. 3	Nov. 17	Nov. 21
St. Louis, Mo.	Nov. 5	Nov. 27	Nov. 16	Nov. 17	Dec. 4	Nov. 8	Nov. 8	Nov. 17
<i>Missouri Valley.</i>								
Leavenworth, Kans.	Nov. 17	Nov. 23	Nov. 9	Oct. 27	Dec. 24	Nov. 20	Nov. 17	c
Omaha, Nebr.	Nov. 16	Oct. 23	Oct. 21	Nov. 1	Dec. 2	Nov. 3	Nov. 7	Oct. 28
Valentine, Nebr.	Nov. 15	Oct. 22	c	Oct. 31	Nov. 7	Oct. 5	Oct. 31	Nov. 11
Huron, S. Dak.	Nov. 15	Oct. 23	Oct. 15	Nov. 2	Nov. 6	Nov. 2	Nov. 6	Oct. 23
Yankton, S. Dak.	Nov. 17	Oct. 23	Nov. 8	Nov. 3	Nov. 8	Nov. 8	Nov. 2	Oct. 28
<i>Extreme Northwest.</i>								
Moorhead, Minn.	Nov. 22	Oct. 20	Oct. 21	Oct. 21	Sept. 12	Oct. 30	Nov. 6	Sept. 24
St. Vincent, Minn.	Sept. 29	Oct. 16	Oct. 16	Sept. 12	Sept. 12	Oct. 14	Nov. 6	Sept. 24
Bismarck, N. Dak.	Sept. 18	Oct. 20	Oct. 18	Oct. 20	Oct. 10	Oct. 5	Oct. 17	Nov. 1
Fort Buford, N. Dak.	Nov. 4	Oct. 7	Oct. 16	Nov. 12	Nov. 30	Oct. 1	Oct. 17	Oct. 1
<i>Northern Slope.</i>								
Assiniboine, Mont.	Oct. 14	Oct. 7	Oct. 18	Sept. 7	Sept. 11	Sept. 30	Oct. 16	Sept. 20
Ft. Custer, Mont.	Sept. 16	Oct. 7	Oct. 26	Nov. 4	Sept. 11	c	c	c
Helena, Mont.	Sept. 4	Oct. 6	Oct. 16	Oct. 30	Sept. 5	Sept. 30	Oct. 15	Sept. 17
Deadwood, S. Dak.	Oct. 24	Oct. 7	c	c	c	c	c	c
Rapid City, S. Dak.	c	c	c	c	c	c	c	c
Cheyenne, Wyo.	Sept. 16	Sept. 12	Oct. 6	Sept. 14	Oct. 4	Sept. 24	Oct. 11	Oct. 1
North Platte, Nebr.	Nov. 5	Oct. 24	Nov. 15	Oct. 3	Nov. 7	Nov. 8	Nov. 1	Nov. 10
<i>Middle Slope.</i>								
Denver, Colo.	Nov. 1	Oct. 8	Oct. 25	Oct. 29	Oct. 4	Oct. 2	Oct. 12	Oct. 1
Dodge City, Kans.	Nov. 11	Nov. 23	Oct. 21	Oct. 31	Nov. 17	Nov. 14	Oct. 23	Nov. 11
Ft. Elliott, Tex.	Nov. 16	Nov. 23	Dec. 28	Nov. 31	Nov. 17	Nov. 14	Oct. 23	Nov. 11
<i>Southern Slope.</i>								
Ft. Sill, Okla.	Feb. 5	Dec. 15	Jan. 17	c	Dec. 7	c	c	c
Abilene, Tex.	Jan. 8	Nov. 27	Jan. 26	Nov. 12	Jan. 10	Dec. 9	Nov. 14	Jan. 10
Ft. Stanton, N. Mex.	Nov. 17	Dec. 3	Oct. 22	Nov. 4	Nov. 14	Nov. 8	Oct. 12	c
<i>Southern Plateau.</i>								
El Paso, Tex.	c	Dec. 14	Jan. 23	Nov. 5	Jan. 9	Dec. 22	Dec. 15	Feb. 11
Santa Fe, N. Mex.	Nov. 16	Nov. 26	Oct. 21	Sept. 24	Nov. 8	Nov. 8	Oct. 12	Nov. 10
Ft. Grant, N. Mex.	Nov. 21	Dec. 22	Jan. 14	Nov. 4	Dec. 8	Dec. 20	c	c
Prescott, Ariz.	Oct. 21	Nov. 24	Dec. 25	Nov. 3	c	c	c	c
Yuma, Ariz.	c	c	c	c	c	c	c	c
<i>Middle Plateau.</i>								
Winnemucca, Nev.	Oct. 10	Nov. 24	Nov. 4	Dec. 7	Oct. 10	Sept. 30	Oct. 15	Nov. 22
Salt Lake City, Utah.	Oct. 19	Nov. 17	Nov. 1	Oct. 19	Oct. 11	Oct. 1	Oct. 11	Nov. 1
Montrose, Colo.	Nov. 2	Nov. 25	Nov. 1	Oct. 23	Oct. 3	Dec. 1	Oct. 11	Sept. 30
<i>Northern Plateau.</i>								
Spokane, Wash.	Nov. 19	Oct. 25	Oct. 27	Nov. 22	Oct. 8	Nov. 14	Nov. 7	Oct. 22
<i>Pacific Coast Region.</i>								
Ft. Canby, Wash.	Feb. 1	Jan. 12	Feb. 14	Jan. 1	Feb. 11	Dec. 30	Nov. 29	Oct. 31
Olympia, Wash.	Dec. 26	Jan. 3	Jan. 16	Dec. 20	Feb. 9	Nov. 14	Nov. 26	Nov. 23
Portland, Ore.	Nov. 22	Nov. 24	Jan. 20	Dec. 21	Feb. 9	Dec. 3	Dec. 19	Nov. 2
Roseburg, Ore.	Nov. 21	Nov. 24	Jan. 17	Nov. 22	Feb. 17	Dec. 23	Dec. 23	Jan. 4
Walla Walla, Wash.	Nov. 8	Nov. 24	Dec. 23	Nov. 23	Jan. 8	Nov. 8	Nov. 26	Nov. 23
Red Bluff, Cal.	c	Jan. 1	c	Jan. 4	c	Dec. 26	c	Jan. 20
Sacramento, Cal.	c	Jan. 4	c	c	c	c	c	c
San Francisco, Cal.	Feb. 4	Jan. 5	c	c	c	c	c	Mar. 2
Keeler, Cal.	Feb. 15	Dec. 30	Jan. 14	c	Feb. 22	Dec. 4	Dec. 5	Nov. 17
Los Angeles, Cal.	c	c	c	c	c	c	c	c
San Diego, Cal.	c	c	c	c	c	c	c	c

a Snow every month. c Station closed. d No reliable record. e No snow fell.

CLOUD PHENOMENA ATTENDING HAILSTORMS.

The following is quoted from a lecture by Prof. Frank W. Very, of the Observatory at Allegheny, Pa., in hope that numerous voluntary observers throughout the United States will add to our knowledge of the special features that develop in their respective localities, owing to topographic and atmospheric peculiarities:

In ordinary summer showers the storm is first seen as a mass of rounded cumulus clouds above a low base of strato-nimbus of greater breadth than the cumuli. The ascensive power is here insufficient to reach the level of cirrus. If any thin, white veils are seen to issue from the summit of the cloud

reach the observer at almost precisely the moment that this squall-cloud passes overhead, for under these circumstances the upward motion has hardly begun before the upper layers of moist air are supersaturated.

We must avoid the conclusion that the advancing edge of the squall-cloud indicates a wind of the same velocity, moving in a like direction. In all probability it denotes rather the progress of a condition of hygrometric change.

While the cloud as a whole is advancing its component parts may often be seen to move backwards.

Behind the advancing edge of the squall-cloud comes a churning mass of conflicting cold, gray clouds, and then the descending sheets of rain or hail, and the loudest thunder, with lightning striking the earth.

The lower surface of cloud, on the rear side of the storm, is a uniformly ascending stratus or cumulo-stratus sheet, sometimes flecked with scattered particles of fracto-cumuli, or "scud," at a low level, produced by evaporation of the fallen water from a soil still warm, with almost immediate condensation of the vapor.

The level of the cloud increases in the rear, because the descending air has been depleted of its moisture in the region of heavy precipitation and is too dry to permit cloud at a low level, while the dryness progressively increases behind, as masses of air which have been thrown up to greater heights begin to descend.

LUMPS OF ICE AS HAILSTONES.

From Mr. S. M. Blandford, temporarily in charge of the Weather Bureau office in Portland, Oregon, there was received too late for the June REVIEW a report of the tornado that occurred June 3, 1894, passing northeastward through the counties of Harney, Grant, and Union, in eastern Oregon. He states that the most novel feature was the hail. One correspondent states that the formation was more in the nature of sheets of ice than simple hailstones. The sheets of ice averaged 3 to 4 inches square and from three-fourths of an inch to 1½ inches in thickness. They had a smooth surface and in falling gave the impression of a vast field or sheet of ice suspended in the atmosphere and suddenly broken into fragments about the size of the palm of the hand. During the progress of the tornado at Long Creek a piano was taken up and carried about a hundred yards.

OBSERVATIONS AT HONOLULU, HAWAIIAN ISLANDS.

As the weather on the Pacific coast depends so largely upon the conditions of the atmosphere to the westward, it is considered important to publish in full and as soon as prac-

ticable the data furnished by observers in Alaska, the Hawaiian Islands, and adjacent regions.

Meteorological observations at Honolulu, Republic of Hawaii, July, 1894, by Curtis J. Lyons, Meteorologist to the Government Survey.

Date.	Barometer at sea level.			Temperature.				Humidity.			Wind.		Cirrus cloud moving from—	Rain to 6 a. m.
	9 a. m.	3 p. m.	9 p. m.	6 a. m.	2 p. m.	9 p. m.	Minimum.	Maximum.	Relative.		Direction.	Force.		
									9 a. m.	9 p. m.				
1..	<i>Ins.</i>	<i>Ins.</i>	<i>Ins.</i>	°	°	°	°	°	%	%				<i>Ins.</i>
2..	30.14	30.11	30.15	71	77	74	70	80	67	74	6.6	ne.	4	0.01
3..	30.17	30.14	30.20	73	79	75	71	82	63	71	6.7	ne.	5	0.06
4..	30.21	30.16	30.22	74	80	74	72	82	58	70	6.2	ne.	5	0.01
5..	30.20	30.15	30.19	72	79	71	71	81	67	77	6.2	ne.	5	0.04
6..	30.16	30.10	30.14	72	76	71	71	79	73	76	6.7	ne.	5	0.16
7..	30.15	30.10	30.15	72	79	74	70	81	69	67	6.1	ne.	5	0.07
8..	30.14	30.06	30.15	73	80	74	72	82	67	77	6.7	ne.	5	0.00
9..	30.15	30.09	30.14	73	80	74	72	83	63	74	6.8	ne.	5	0.04
10..	30.15	29.07	30.13	73	80	75	72	81	74	67	6.7	ne.	5	0.10
11..	30.13	30.06	30.13	73	81	74	73	83	63	72	6.3	nne.	4	0.03
12..	30.12	30.06	30.13	70	81	75	67	83	71	72	7.0	s., nne.	3	0.00
13..	30.16	30.09	30.17	75	81	76	74	84	59	66	6.4	nne.	3	0.00
14..	30.17	30.09	30.16	75	82	74	74	84	59	70	6.3	ene., nne	3	0.00
15..	30.12	29.06	30.10	70	76	74	69	81	62	66	6.2	ene., nne	3	0.00
16..	30.07	30.01	30.08	73	80	74	72	82	56	70	6.3	ne.	3	0.02
17..	30.08	30.03	30.07	72	80	74	70	82	65	70	6.3	nne.	4	0.05
18..	30.10	30.06	30.12	72	82	74	70	84	63	74	6.7	ne.	4	0.05
19..														
20..														
21..														
22..														
23..														
24..														
25..														
26..														
27..														
28..														
29..														
30..														
31..														
Mean.														

The barometer is corrected for temperature and reduced to sea level, but the gravity correction, —0.06, is still to be applied.

The absolute humidity is expressed in grains of water, per cubic foot, and is the average of four observations daily.

The rain is measured at 6 a. m., daily.

The extremes of the force of the wind are given when it has varied more than usual. Sth. lava rose in crater of Kilauea and overflowed. 11th, slight earthquake disturbance. Breakdown in floor of crater, fall of 270 feet in twelve hours.

METEOROLOGICAL TABLES.

[Prepared by the Division of Records and Meteorological Data.]

The following pages present in tabular form the climatological data for the current month, on which the text of the preceding part of this REVIEW has, to a large extent, been based.

For a detailed description of the methods of observation, compilation, and computation relating to these tables, the reader is referred to page 129 of the MONTHLY WEATHER REVIEW for March, 1894. The general contents of the tables are as follows:

Table I gives for 140 Weather Bureau stations, making two observations daily, and for 10 others making only one observation, the ordinary climatological data.

Table II gives for about 2,200 stations, occupied by voluntary observers, the mean and extreme temperatures and the total precipitation.

Table III gives climatological data for about 30 Canadian stations.

Table IV *a* gives for 38 Weather Bureau stations the percentages of sunshine for each hour of local mean time.

Table IV *b* gives for 43 Weather Bureau stations the total hourly rainfall for each hour of seventy-fifth meridian time.

Table V gives for 81 stations the mean temperatures for each hour of seventy-fifth meridian time.

Table VI gives for 66 stations the mean pressures for each hour of seventy-fifth meridian time.

Table VII gives for 138 stations the mean hourly movement of the wind.

Table VIII gives for 68 stations the resultant movements and directions of the wind from continuous registrations.

Table IX gives for 140 stations the component and resultant directions based on simultaneous observations at 8 a. m. and 8 p. m., seventy-fifth meridian time.